

BEES IN THE COLLECTION OF THE UNITED STATES
NATIONAL MUSEUM. 2.

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The present contribution deals principally with Asiatic bees, and includes a number of new species collected by Dr. W. L. Abbott in localities rarely visited by naturalists. Especially interesting are those obtained at very high altitudes in the Himalayan region, belonging to a peculiar fauna, recently made known in part through the work of the British Tibet expedition.¹ Doctor Abbott's collections have long priority over those of the British expedition, but descriptions of the latter have, in part, been published first.

HALICTUS NIKKOENSIS, new species.

Female.—Length slightly over 6 mm., anterior wing $4\frac{1}{2}$; head, thorax, and abdomen olive-green; head large, broader than thorax, facial quadrangle larger than the small mesothorax; clypeus not produced, its lower part blackened, its surface shining, with distinct but very sparse punctures; mandibles dark red subapically; supra-clypeal area shining; front and vertex dullish, very densely granular-punctate; cheeks broad, unarmed; antennæ dark, apical part of flagellum ferruginous; hair of head and thorax dull white, scanty; mesothorax and scutellum shining, with fine close punctures, yet not so close on disk as to hide the surface; area of metathorax looking granular under a lens, but really covered with very fine, vermiform anastomosing wrinkles; tegulæ testaceous; wings yellowish, with a sort of dilute orange tint; stigma and nervures pale ferruginous, outer nervures distinct; second s. m. narrow, only about half as broad as third, receiving first r. n. at about beginning of its last third; legs dark, with pale yellowish hair, anterior and middle knees pallid, tarsi reddish, the hind basitarsus darker; hind spur with two large broad blunt teeth, the first about quadrate, the second very low, very much broader than long; abdomen finely punctured, the hind

¹ See Entomologist, Sept., 1910.

margins of the segments more or less testaceous, and covered with grayish-white hair bands, those on the first two segments wanting in the middle, but on the third and fourth entire.

Habitat.—Nikko, Japan (Koebele).

A species of the group of *H. tumulorum*, noticeable for the large head, with a well-developed occipital region. Among the described Japanese species it is nearest to *H. alexoides* Strand, but this latter is larger, with the tarsi and basitarsi of the female clear yellow.

Type.—Cat. No. 13529, U.S.N.M.

In the following key the new species is contrasted with several other related forms:

- Abdomen densely covered with pubescence, the apical hair bands, if any, not conspicuous 1.
 Abdomen with very conspicuous apical hair bands 2.
 1. About 9 mm. long; hair of abdomen distinctly ochreous, wings slightly milky. (Buda; Friese)..... *cariniventris* Morawitz.
 Smaller; hair of abdomen dense, pale grayish; vertex and mesothorax bluish. *vestitus* Lepeletier.
 2. Metathorax dark, greenish-black (Innsbruck; Friese)..... *tumulorum* Linnaeus.
 Metathorax clear green 3.
 3. Mesothorax small, closely punctured but shining, the surface visible between the punctures *nikkoensis* Cockerell.
 Mesothorax very densely punctured, granular *subauratus* Rossi (including *seladonius* Fabricius) and *virescens* Lepeletier (including *gramineus* Smith.)

HALICTUS CALCEATUS Scopoli.

Gersau, Switzerland, July 30, and Rigi Culm, Switzerland, August 1, 1909 (T. D. A. and W. P. Cockerell).

HALICTUS QUADRINOTATUS Kirby.

A male at Wangen, Baden, August 5, 1909 (Cockerell).

HALICTUS PAUXILLUS Schenk.

Two females at Wangen, Baden, August 5, 1909 (Cockerell). Frey-Gessner remarks that one would take this for a small *H. albipes*, but it has the mesothorax less densely punctured, with the surface between the punctures plainly visible. This is well said, for among a series of *H. albipes* received from Doctor Friese I find a *pauxillus*, collected by him at Buda.

HALICTUS INTERRUPTUS Panzer.

One female at Wangen, Baden, August 5, 1909 (Cockerell).

HALICTUS TUMULORUM Linnaeus.

My wife and I collected this in 1909 at Troyes, France, August 8; Gersau, Switzerland, July 30; Wangen, Baden, August 5.

HALICTUS MORIO Fabricius.

Wangen, Baden, August 5, 1909 (Cockerell).

ANDRENA KNUTHI Alfken.

Two males from Wakasa, Japan (T. Fukai). The dark markings on the upper part of the clypeus may be barely visible (excepting the usual spots, which are always distinct), or the whole upper two-fifths of the clypeus may be black. The abdomen is extremely shiny, with the hind margins of the segments testaceous.

ANDRENA PRÆCOCIFORMIS, new species.

Male.—Length 8 to 9 mm., black, with long white hair on head, thorax, and legs, black at sides of face, upper part of cheeks behind, and a little on scutellum. In Schmiedeknecht's table of European species it runs to *A. parvula*, but it actually resembles *A. præcox* Scopoli, so much so that at first sight it seems to be the same. It differs from *præcox* by the rather smaller size; the cheeks, though broad, dullish except near the eye, and not angled behind (shiny and angled in *præcox*); the mandibles moderate, without the very long falciform apical tooth of *præcox*; the head above and cheeks with less black hair; the sides of thorax behind with hair all white; the metathorax rougher; the hind margins of abdominal segments a little reddish, and with a tendency to thin marginal hair bands at sides. Mesothorax dull and rough; metathorax very dull and rough, the area ill defined, minutely granular, roughened basally, its apical angle acute; tegulae very dark rufo-piceous; wings as in *præcox*, but stigma darker (variable); first r. n. joining the broad second s. m. about middle; abdomen shining, without distinct punctures. Antennal joints 3 to 5 measured as follows in two specimens: the type, (3.) 374, (4) 255, (5.) 340 μ . Another, (3.) 323, (4) 306, (5) 340 μ . The latter specimen is the larger.

Habitat.—Japan, specimens numbered 166 and 54.

The Californian *A. knuthiana* Cockerell is also allied. *A. japonica* Alfken is also compared with *præcox*, but it is larger and evidently different.

Type.—Cat. No. 13530, U.S.N.M.

ANDRENA RUPSHUENSIS, new species.

Female.—Length slightly over 11 mm.; black, with pale hair, the form rather slender, at first sight rather suggesting a male; hair of head and thorax long and loose, white below, very pale ochreous above, vertex and sides of front with dark fuscous hair; face very broad, eyes small, so that the facial quadrangle is about $1\frac{2}{3}$ as broad as long; malar space large, brilliantly shining; mandibles with the apical half obscurely ferruginous; cheeks broad, shining; process of labrum broad, truncate; clypeus brilliantly shining, well punctured, except a broad smooth median band; front dull and roughened; facial foveae broad, occupying much more than half space between

antennæ and eyes, dark seal brown, not separated from eye, ending a little above level of top of clypeus; antennæ black (flagellum brownish-black), the third joint almost as long as the next three combined; mesothorax shining, the disk with distinct but well separated punctures; scutellum shining; base of metathorax dull and granular, without rugæ, the area scarcely defined; tegulæ dark rufotestaceous; wings moderately dusky; stigma and nervures ferruginous, rather dark; first r. n. reaching second s. m. far beyond middle; legs black, the tarsi dark ferruginous; spurs ferruginous; hair of legs dull white on femora, pale orange on tarsi; mainly reddish on tibiæ; the orange scopa of hind tibia has collected a quantity of red pollen; abdomen shining, with only feeble piliferous punctures, hind margins of the segments narrowly testaceous; first segment with much long pale hair; segments one to four with conspicuous white apical hair-bands, that on first thin in the middle; caudal fimbria purplish-sooty, as also the thick apical fringe of fifth segment.

Habitat.—Rupshu, Ladak, 16,000 feet, July 21 and 22, 1897 (W. L. Abbott).

In Schmiedeknecht's table this runs to 153, and runs out because of the yellow or orange scopa, combined with the absence of distinct punctures on the abdomen. The superficial appearance is that of a rather pale *A. fulvicrus* Kirby, but the latter has a strongly punctured abdomen. This seems to have no special affinity with any of the numerous species described from northern India and adjacent regions. It may possibly be identical with one of the 52 described by Morawitz from Turkestan, but I think not, as the bee-fauna of the higher altitudes in the Himalayas seems to be wholly distinct (as to species) from that of the lower levels, as might be expected.

Type.—Cat. No. 13531, U.S.N.M.

ANDRENA PILIPES Fabricius.

Pekin, China, April 21–30, 1901 (M. L. Robb). These Chinese specimens run exactly to *pilipes* in Schmiedeknecht's table, and upon comparison with a specimen of *A. pilipes* from Sicily, I fail to find any tangible difference. One specimen (female) is stylopized.

ANDRENA THORACICA Fabricius.

Pekin, China, April 20, 1901 (M. L. Robb). Three females in rather poor condition. These run exactly to *thoracica* in Schmeideknecht's table, and agree perfectly with his description. I possess only the male of European *thoracica*, but it agrees in general with these females, except for the usual sexual differences; especially characteristic are the pallid wings with ferruginous nervures, the second s. m. large. In both sexes the b. n. falls a little short of the t. m.

The collection contains three other species of *Andrena* from Pekin which I fail to recognize, but they are in indifferent condition, and I can not venture to describe them as new.

NOMIA CHALYBEATA Smith.

One male; Foochow, China (H. R. Caldwell). This agrees well enough with Smith's description of his type from Shanghai, but Bingham describes *chalybeata*, which he records from Tenasserim, as having rufo-fulvous legs. I can only suppose that Bingham had a different species. The Foochow specimen has a good deal of black hair on the mesothorax and scutellum, and the flagellum and apical margins of the wings are darker than Smith indicates. There are, perhaps, several closely allied species or races of this immediate group, but if so more material is needed for their elucidation.

NOMIA PUNCTULATA Dalla Torre.

Described from China. A male and female from Japan (*Mitsukuri*) do not appear to differ in any respect. The female has three emerald green bands on the abdomen, while the four of the male are more bluish green. The species is very close to the Indian *N. elliotii* Smith, but easily separated by the absence of a band on the first abdominal segment.

NOMIA TERMINATA Smith, var. a.

Female.—Length about 14 mm., anterior wing $11\frac{1}{2}$; black, without any evident bands on abdomen; postscutellum unarmed; wings strongly yellowish, the apex broadly clouded with fuscous. Hair of head and thorax ferruginous, but on mesothorax and anterior part of scutellum thin and mixed with fuscous; mandibles black; clypeus shining, depressed in middle, with very strong, sparse punctures; supraclypeal area elevated and punctured; clypeal keel or ridge evanescent; abdomen shining, feebly punctured, the hind margins of second and third segments at sides with pale yellowish tegumentary bands.

Two females from Khow Sai Dow Mountain, 1,000 feet, Lower Siam, February, 1899 (W. L. Abbott). On account of the feeble clypeal keel, the rudiments of tegumentary bands on abdomen, and the feebly punctured abdominal segments, I was inclined to regard this as a distinct species. Close comparison with the descriptions of Smith and Bingham convinced me that the insect was at best a variety, however. Bingham states that the clypeal keel is slight, and Smith says the abdomen is smooth and shining. The rudiments of tegumentary bands may have been overlooked.

N. aureipennis Gribodo, from Perak, is smaller (female, 11 mm.), and the tegumentary bands on the second and third segments are better developed, though interrupted in the middle. This, though very closely allied, has better claims to distinction.

PSEUDOMELECTA INTERRUPTA Cresson.

Kerrville, Texas, April, 1907 (P. Durham).

COELIOXYS (LIOTHYRAPIS, new subgenus) APICATA Smith.

One female; Trong, Lower Siam, January–February, 1899 (W. L. Abbott). This agrees with an Indian *C. apicata* from F. Smith's collection. The species is taken as the type of a new subgenus *Liothyrapis*, distinguished by the absence of hair on the eyes. According to Friese and others, *C. apicata* is a synonym of *C. decipiens* Spinola, described from Egypt, and the same species is said to extend to South Africa, whence it was described as *C. verticalis* Smith. I have a female of *C. verticalis* from Doctor Brauns, collected at Willowmore, Cape Colony, December 1, 1904. It is a different looking insect from *apicata*, although structurally almost the same. The apical part of the second abdominal segment (beyond the groove) is shorter, the more abundant pale pubescence gives the insect a hoary appearance, the legs are largely red, and the wings are hardly so dark. I am satisfied that *apicata* and *verticalis* should be regarded as different species.

I have no material of the genuine *C. decipiens*, but according to Spinola it has black legs, and the wings hyaline, only smoky at the distal margin. Probably it is separable from *apicata* on the one hand and *verticalis* on the other.

COELIOXYS SIAMENSIS, new species.

Female.—Length 12 mm.; black, including legs and antennæ, with white pubescence; hair on inner side of tarsi pale golden; eyes pale green, their hair short but thick; face with much white hair; vertex with very large coarse punctures; cheeks behind eyes densely covered with pure white hair, this white area sharply bounded behind by a keel or ridge; mesothorax and scutellum with exceedingly large punctures, those on scutellum more irregular and less dense; hind margin of scutellum turned upwards, more or less notched in the middle; lateral teeth strong; prothorax, margins of mesopleura, tubercles, and metathorax covered with white hair, which also forms a spot behind each tegula, a pair of spots on anterior margin of scutellum, and a tuft below each scutellar tooth; area of metathorax irregularly plicate at base, otherwise smooth; tegulæ piceous; wings with about the apical half dark fuscous; spurs dark reddish brown; abdomen with slight purple tints, shining, strongly but sparsely punctured, with narrow pure white hair-bands at the apical margins of the segments, broadly interrupted in the middle; last dorsal segment very finely punctured, narrowed and keeled apically; last ventral elongate-conical, not notched at sides, consid-

erably exceeding dorsal, moderately bent downward; penultimate ventral segment sparsely punctured basally, densely striatulate at apex.

Habitat.—Trong, Lower Siam, two females, one in poor condition (W. L. Abbott).

In Bingham's table this runs to *C. confusus* Smith, and indeed it has been identified by Doctor Ashmead as this species. I believe it is distinct, from the characters cited by Bingham for *confusus*, the two being separable as follows:

Clypeus higher than usual, but otherwise normal; last ventral segment rather broad, though with nearly straight sides; apical margin of scutellum turned upward; abdomen strongly though sparsely punctured, the basal segment like the others.

siamensis.

Clypeus very large, transverse anteriorly; last ventral segment extremely narrow; apical margin of scutellum not turned upward; abdomen finely punctured, the punctures most dense on basal segment..... *confusus*.

Bingham does not specifically state that the hind scutellar margin of *confusus* is not upturned, but Nurse describes *C. perseus* as the only Indian species having this character.

C. leptaxis Enderlein, from Sumatra, seems also to be allied.

In its general superficial appearance *C. siamensis* much resembles *C. penetrix* Smith, from Willowmore, Cape Colony (Brauns).

Type.—Cat. No. 13532, U.S.N.M.

EPEOLUS PUSILLUS Cresson.

Victoria, Texas, April 1, 1907, at flowers of *Callirrhoe involucrata* (Nuttall), one male (J. D. Mitchell).

STELIS COSTALIS Cresson.

One male; Dallas, Texas, May 11, 1908 (R. A. Cushman).

STELIS LOUISÆ, new species.

Male.—Length about 7 mm., similar to *S. costalis*, but second r. n. meeting second t. c.; clypeus with a very broad yellow transverse band, lobed above, leaving the upper part and lower margin dark; pleura with a large chrome yellow patch; coxæ, trochanters, and femora, except at apex, black; apices of femora and all of tibiæ and tarsi, pale yellowish-ferruginous, the anterior tibiæ quite yellow in front; first abdominal segment more coarsely punctured, its band broader, with the posterior excavations ferruginous; second segment with only lateral spots; fifth with only a small transverse yellow mark in middle, but bands on third and fourth as in *costalis* (probably these abdominal markings are variable); short hair on and about apex of sixth segment black. The labrum is dark, whereas in *costalis* it is clear red. The insect is smaller and narrower than *S. costalis*.

Habitat.—Mound, Louisiana, May 12, 1905 (C. R. Jones).

Type.—Cat. No. 13533, U.S.N.M.

DIANTHIDIUM SIMILE Cresson.

Two males; Kerrville, Texas, April, 1907, collected by H. Durham, one dated April 14, at flowers of *Marrubium vulgare*. The Texas *D. simile* is not altogether typical, and should perhaps be separated.¹

DIANTHIDIUM PARVUM Cresson.

Two of each sex; Flagstaff, Arizona, at flowers of *Iris*, June 11, 1909 (F. C. Pratt). This species has the same structure as *D. simile*, and is perhaps only to be regarded as a western race. The male of *D. pudicum* Cresson is distinct by the more strongly lobed apex of abdomen.

DIANTHIDIUM TEXANUM Cresson.

One of each sex; Dallas, Texas; the female, March 2, 1908 (with a second label, evidently erroneous, giving date April 28, 1908); the male, May 3, 1908 (C. E. Hood). Cresson describes only the male, but the female looks just the same, except that the middle third or more of the clypeus is black. The ventral scope is yellowish white.

ANTHIDIUM PECOSENSE Cockerell.

One male and two females; Flagstaff, Arizona, at flowers of *Iris*, June 11, 1909 (F. C. Pratt). The male type of *pecosense* has the second r. n. meeting the outer t. c.; in the three Arizona specimens it goes beyond it, in the manner of *Dianthidium*. A minute comparison of the males leaves no doubt that they belong to the same species. The female is similar but rather smaller, with the clypeus and lateral face marks yellow, as in the male; mandibles with much yellow; labrum black; a yellow occipital stripe, broadly interrupted in the middle; cheeks black; thoracic yellow markings better developed than in male, with the axillæ and hind margin of scutellum (narrowly interrupted in middle) broadly yellow; legs with more yellow, the femora with a large yellow stripe or band; band on first abdominal segment notched behind, not divided into four spots; sixth segment yellow, with broad low rounded lateral lobes; ventral scope glittering pale fulvous.

ANTHIDIUM POUFREUM Titus.

This has been printed *pondreum*, a misprint for *poufreum*. Mr. Pratt took four males and two females at Flagstaff, Arizona, at *Iris* flowers, at the same time as the *A. pecosense* cited above. The Arizona males are more robust than Colorado specimens usually are. The female is like that of *A. pecosense*, but the clypeus has a large black triangle with the apex pointing downwards, the whole clypeus being divided into three subequal triangular areas, one black and two yellow. The yellow of the mesothorax is confined to a stripe

¹ See Cockerell, Proc. Ent. Soc. Washington, vol. 9, 1908, p. 72.

above each tegula, the abdominal bands are lighter, and the femora are black without the large yellow stripes. Some of the characters formerly cited to separate male *pecosense* from *poudreum* are not constant. A constant character in the Arizona males is the absence of yellow on the mesothorax.

The following key separates some females of *Anthidium* in which the scopa is pale. My *A. blanditum prædentatum* seems to belong rather with *placitum*. The female of *A. pecosense* so nearly agrees with the description of *A. blanditum* from Nevada as to suggest that the two represent variations or races of one species.

Clypeus yellow, with at most lower edge, and two dots near upper margin, dark; mesothorax with an angular pale stripe on each side. 1

Clypeus at least largely dark..... 2

1. Pubescence pale..... *blanditum* Cresson.

Pubescence fulvous, especially above; legs with less black... *pecosense* Cockerell.

2. Mesothorax without light markings; bands on abdominal segments 1 to 5, each broken into four spots. *maculosum* Cresson.

Mesothorax with light markings..... 3.

3. Mesothorax with an angular pale stripe on each side..... 4

Mesothorax with a straight mark or a spot on each side. 5.

4. Clypeus with a median black stripe..... *placitum* Creighton

Clypeus with a black bidentate mark on upper part; legs with more black.

placitum prædentatum Cockerell.

5. Sixth abdominal segment above yellow, except at base; wings darker.

poudreum Titus.

Sixth abdominal segment with two rounded pale spots; wings paler.

montivagum Cresson.

Through the kindness of Professor Gillette I received a pair of supposedly authentic *A. poudreum*, collected at Fort Collins and Palmer Lake, Colorado. They are both *A. tenuifloræ* Cockerell, but it is clear from the description of *poudreum* that it could not have been based on specimens of *tenuifloræ*.

ANTHIDIUM PORTERÆ Cockerell.

Two males and one female; Marfa, Texas, June 6, 1908 (Mitchell and Cushman).

ANTHIDIUM TENUIFLORÆ Cockerell.

Two males; Helena, Montana, August 6 (W. M. Mann). New to Montana.

ANTHIDIUM PHILORUM Cockerell, var. **ABBOTTI**, new variety.

Male.—Length, 10 mm.; all the pubescence white; clypeus, lateral face-marks, and mandibles except apex, cream-color, as also a spot above top of each eye; antennæ wholly black; thorax without light markings; tegulæ black; basitarsi light yellow, the other tarsal joints light ferruginous; abdominal bands all interrupted in the middle (though the last two very narrowly), and deeply and broadly excavated (that on second segment interrupted) at sides; no light markings on first or last segments; apical segment with broad divergent

lateral lobes, and a slender median spine; penultimate segment strongly dentate at sides, the margin next to the teeth not denticulate.

Habitat.—Rupshu, Ladak, 16,000 feet, July 23, 1897 (W. L. Abbott).

In Friese's table this runs to *A. affine* Morawitz, but differs in various particulars; for example, the lateral lobes at the end of the abdomen have no inwardly-directed point and are not notched on the outer side. There is the strongest resemblance to the Rocky Mountain *A. tenuifloræ* Cockerell; superficially they appear the same, but on close comparison many minor differences appear.

A. philorum was described from a female obtained by the British Tibet expedition, at an altitude of 13,000 feet in the Himalayas. The male here recorded may, I think, be safely referred to it.¹

Type.—Cat. No. 13534, U.S.N.M.

PROANTHIDIUM KASHGARENSE, new species.

Female.—Length about 10 mm.; robust, black with deep chrome-yellow markings, the femora and the basal declivity of the abdomen largely red; head and throat very densely, rather coarsely punctured, the rather coarse pubescence rufofulvous above, paler below, pale yellowish-gray on pleura and sides of metathorax; face broad, eyes converging below, dull green slightly suffused with reddish; clypeus and broad lateral marks yellow, the latter broadly obliquely truncate above, the lower side of the truncation on the orbit; lower edge of clypeus black, with a strong transverse groove; mandibles yellow except the broad edge, which bears many black teeth, a big one at the end being followed by six very small ones, after which come several big ones; an entire yellow band across occiput, broadened at sides and ending in a sharp point; antennæ black, joints 2, 5, and 6 red beneath; mesothorax wholly black; tubercles largely yellow; scutellum and axillæ very broadly margined with yellow; axillæ not dentiform; scutellum projecting, with a sharp posterior edge, the lateral corners subangulate but rounded; tegulæ punctured, yellow with a large rufous spot; wings dusky, strongly so in and beyond marginal cell; b. n. going basal of t. m.; first r. n. meeting first t. c.; second r. n. going well beyond second t. c.; legs yellow except at extreme base, the femora suffused with red; hair on inner side of tarsi fulvous, on outer side pale golden; abdomen with pale fulvous hair, including the scopa; basin of first segment sharply margined; apex broadly rounded, turned outwards; all the segments with broad deep yellow bands, the first three or four rather narrowly interrupted in middle, but none notched at sides.

¹Since writing the above I have received a male of true *A. philorum* from the British Museum. It differs from Doctor Abbott's insect in having large pale-yellow marks on the last abdominal segment, and the first segment having a large pale-yellow patch on each side, continued mesad as a slender semicircular-shaped mark.

Habitat.—Kashgar, Chinese Turkestan, August 26, 1893 (W. L. Abbott).

This is a species of *Proanthidium*, related to *P. oblongatum*, from which it differs by the fulvous scopa and the greater amount of yellow on the thorax, as well as other details. *Proanthidium* Friese must not be confused with *Protanthidium* T. and W. Cockerell, which is a quite different genus.

Type.—Cat. No. 13535, U.S.N.M.

LITHURGUS APICALIS OPUNTIE Cockerell.

One female; Del Rio, Texas, May 8, 1907 (F. C. Bishopp).

MEGACHILE PAMIRENSIS, new species.

Male.—Length 13 mm.; black, the tarsi ferruginous, the anterior and middle basitarsi variably dusky at base; head ordinary; eyes obscure reddish; mandibles dark, with two apical teeth, the outer one long; vertex and front dull and roughened; face and lower and hind part of cheeks densely covered with long white hair; anterior part of cheeks, and vertex, with fuscous hair, but occiput with long pale hair; antennæ black, third joint longer than second, but shorter than fourth; mesothorax and scutellum densely punctured; thorax above with dull white hair slightly tinged with ochreous, or strongly suffused with reddish-fuscous, especially on scutellum; hair of pleura and metathorax also variable in the same manner; tegulæ shining black, slightly reddish posteriorly; wings moderately dusky, not dark; a brownish cloud in marginal cell; legs with long hair, varying from white to brown like that of the thorax, but the middle and hind tarsi and anterior tarsi in large part, with clear ferruginous hair, matching their tegumentary color; anterior coxæ densely covered with long hair, unarmed; anterior tarsi rather thick, but not otherwise modified; tibial spurs ferruginous; abdomen with black hair on basal part of first segment, but otherwise the hair on first three segments is warm ochreous; on the other segments it is black, except that on the fourth it is largely ochreous or practically all black; sixth segment depressed, the broadly rounded distal margin bearing a series of eight to ten prominent subequal teeth; seventh segment with a broadly rounded median lobe; no distinct hair-bands, but the pale hair on the first three segments is so arranged as to produce a somewhat banded effect; fourth ventral segment not emarginate.

Habitat.—Tagdumbash, Pamir, 13,000 feet, June 14, 1894 (W. L. Abbott). Two males.

A very distinct species, related to the *M. ericetorum* group. The appearance of the abdomen (but not the apical structure) is much like that of *M. circumcincta*. The mandibles and antennæ are formed essentially as in *ericetorum*, and the sixth abdominal segment is

similar, but the seventh is quite different. *M. piliventris* Morawitz has the sixth abdominal segment serrate, but the anterior tarsi are broadly dilated.

Type.—Cat. No. 13536, U.S.N.M.

MEGACHILE LADACENSIS, new species.

Male.—Length, 11–11½ mm.; black, the anterior femora in front, their tibiæ, extreme apex of middle and hind tibiæ in front, and middle and hind tarsi all ferruginous, the middle basitarsus suffused with blackish basally; first three joints of anterior tarsi very pale yellowish, last two ferruginous; head ordinary, rather broad; eyes dull green; mandibles thick, with two apical teeth, which are more or less reddish; beneath at base, the mandibles have a large process, which fits into a little shelf on under side of head, the edge of which is covered with ochreous tomentum; clypeus normal, shining and minutely punctured; front minutely roughened; face covered with long white hair; hair of vertex and thorax above thin, dull white; mesothorax closely punctured, except in the middle of the disk, where it is shining, with scattered punctures, but the posterior middle is dull; anterior edge of scutellum shining; tegulæ ferruginous, clouded with brownish toward base; wings hyaline, faintly dusky; anterior coxæ with stout dark spines, a little patch of orange pubescence at the base of each; anterior tarsi little broadened, but with a long white fringe behind, covering a yellowish one about half as long; the light yellow basitarsus parallel-sided, more than twice as long as broad, the inner apical corner produced, finger-like; hair on inner side of hind tarsi very pale orange; hind spurs pale brownish; abdomen shining, rather sparsely punctured, the hind margins of the segments rather broadly testaceous or ferruginous; first two segments with thin, long white hair; hind margins of second to fourth with thick apical fringes of white hair, that on second developed only at sides, that on third broadly interrupted, that on fourth entire; extreme sides of third and fourth segments with some yellowish hair; no black hair on abdomen anywhere; fifth and sixth segments with long ochreous or fulvous hair, the fifth with a white fringe under the fulvous; projecting margin of sixth segment broadly shallowly emarginate, and at sides variably inclined to be crenulate; seventh segment with a strong median projection, and a little one on each side; ventral segments broadly pale-margined, fourth emarginate.

Habitat.—The type is labeled Rupshu, Ladak, 16,000 feet, July 21, 1897 (W. L. Abbott).

Another male collected by Doctor Abbott is labeled Tsomorari Lake, Rupshu, Ladak, 16,000 feet, July 31, 1897. Apparently close to *M. dentiventris* Smith, but that has black tegulæ, and the end of the abdomen is different.

Type.—Cat. No. 13537, U.S.N.M.

MEGACHILE RUPSHUENSIS, new species.

Female.—Length 10 mm.; black, the small joints of tarsi ferruginous; hair of head, thorax, and legs rather dull white, thin, not at all mixed with dark; head rather large; mandibles broad, without distinct teeth (doubtless worn); clypeus closely punctured, with an imperfect median ridge, the lower margin thickened, slightly crenulated, and with a minute median tubercle; front dull, except in front of ocelli, where it is shining; vertex shining, sparsely punctured; antennæ black; mesothorax shining, closely punctured at sides, but the disk broadly smooth, very sparsely punctured, the smooth area reaching back to scutellum; scutellum with a slight median eminence, which is shining; tegulæ dark reddish, with paler margins; wings slightly dusky; all the tarsi thick, with the hair on inner side orange; hind basitarsus rather broad and flat; spurs ferruginous; abdomen shining, with white hair-bands as in *M. ladacensis*, but no ferruginous hair dorsally, the last dorsal segment having appressed white hair; ventral scopa very bright fox-red, containing pollen of the same color.

Habitat.—Rupshu, Ladak, 16,000 feet, July 23, 1897 (W. L. Abbott).

I thought at first that this was the female of *M. ladacensis*, but the smaller size and differences in sculpture make this improbable, notwithstanding the close superficial resemblance. It is not impossible, however, that they may belong together.

Type.—Cat. No. 13538, U.S.N.M.

MEGACHILE INIMICA Cresson.

Runge, Texas, at flowers of *Helianthus*, September 13, 1904, three females (J. C. Crawford); Dallas, Texas, at flowers of *Gaillardia* June 10, 1907, female (F. C. Bishopp).

MEGACHILE MEGAGYNA Cockerell.

Ardmore, Oklahoma, July 11, two females (C. R. Jones).

MEGACHILE VALLORUM Cockerell.

Dallas, Texas, August 23, 1905, female (J. C. Crawford).

MEGACHILE POLLICARIS PEREXIMIA Cockerell.

Devils River, Texas, May 8, a small (about 12½ mm. long) male (F. C. Bishopp); Devils River, May 6, 1907, at flowers of *Monarda citriodora*, two males, the abdomen strongly infested with mites (F. C. Pratt); Victoria, Texas, at flowers of *Helianthus*, April 26, 1904, two males (F. C. Bishopp); Paris, Texas, May, 1904 (Bishopp); Calvert, Texas, one male, April 6 (C. R. Jones); Kerrville, Texas, April 12, one male at *Marrubium vulgare* (F. C. Pratt).

MEGACHILE ALBITARSIS Cresson.

Chicato, Texas, September 6, 1904, two males (F. C. Bishopp); Ladonia, Texas, May 25, at flowers of *Rudbeckia*, sp. (F. C. Bishopp).

MEGACHILE SAYI HETERODONTA Cockerell.

Cresson says of *M. sayi*, "legs brown-ferruginous or black," and adds, "the male specimens from Texas have the legs, except coxæ, entirely brown-ferruginous." The red-legged form may therefore be regarded as the type, and Texas the type-locality. A female from Illinois, received from Professor Robertson, is red-legged. *M. heterodonta* Cockerell is black-legged, but certainly represents nothing more than a race of *M. sayi*.

MEGACHILE SAYI PALUDICOLA, new subspecies.

Female.—Unusually large, about 16 to 18 mm. long; legs black or dark reddish; wings dark throughout, though darker in the costal region; ventral scopa light yellowish, black on last segment.

Habitat.—Hearne, Texas, July 23, 1906, nesting in bogs, twelve females (F. C. Bishopp).

The ventral scopa of *sayi* and *heterodonta* is creamy-white, that of *paludicola* decidedly yellow.

Type.—Cat. No. 13539, U.S.N.M.

MEGACHILE COMATA Cresson.

Seven males; Kerrville, Texas, three at *Salvia pitcheri*, four at *Marrubium vulgare*, April 10 to 12, 1907 (F. C. Pratt).

MEGACHILE PRUINA Smith.

Texan males bear the following data: Kerrville, at flowers of *Marrubium vulgare*, April 12, 1907 (F. C. Pratt); Kerrville, at flowers of *Tetragonotheca ludoviciana*, April 12, 1907 (F. C. Pratt); Kerrville, at flowers of *Tetrameura linearifolia*, April 11, 1907 (F. C. Pratt); Kerrville, at *Verbena*, April 11, 1907 (F. C. Pratt); Dallas, at *Helianthus*, September 30, 1906 (R. A. Cushman); Devils River, at *Gaillardia pulchella*, May 3, 1907 (F. C. Pratt).

CROCISA DECORA Smith.

Trong, Lower Siam, January–February, 1899 (W. L. Abbott). In the Entomologist, August, 1910, I recorded this species from several tropical localities, but suggested a possibility that the true *decora*, from north China, might be distinct. Mr. G. Meade-Waldo has now compared the species recorded by me with Smith's type, and kindly reports that they agree in all essential points. He returns to me a Singapore specimen as a reliable exponent of *decora*. The Siamese

specimen differs a little, in that the blue is deeply excavated at the sides of the first abdominal segment, and the abdominal bands are more widely interrupted than in the type, but this appears to be only a matter of individual variation.

OSMIA SUBFASCIATA Cresson.

This small blue species runs in both sexes in Robertson's tables to *Diceratosmia*, except for the absence of the frontal tubercles. The female has tridentate mandibles, and the ventral scopa white, varying to slightly yellowish. The following localities are represented in the material before me:

OKLAHOMA.

Hugo, at flowers of *Monarda citriodora*, females, June 20 (F. C. Bishopp).

Ardmore. Females collected by Bishopp, April 11 and 21, at *Rubus*; males by Bishopp, March 3 to April 21, at *Rubus* and wild plum.

TEXAS.

Dallas. Fifty-seven males, collected by Bishopp and Cushman, March 7 to April 26, common at *Rubus* and wild plum, but also at *Cercis canadensis* and *Amorpha fruticosa*. Twenty-one females, mostly collected by Bishopp, March 20 to June 26, at blackberry, *Monarda citriodora* and *Gaillardia pulchella*. Two are labeled as bred from heads of *Aphanostephus skirrobasis*, but Messrs. Pierce and Bishopp, in response to an inquiry, state that they think the bees were from the flowers, and whoever labeled them, accidentally omitted to erase the word "bred." Two collected by E. S. Tucker, March 13, 1908, are labeled "in nest mud wasp."

Ladonia. Females collected by Bishopp at *Achillea*, May 17, and at *Monarda*, June 1.

Pittsburg. One female, May 9 (Bishopp).

Kerrville. Twenty-one females, one collected by P. Durham, the rest by F. C. Pratt, April 12 and 13, at *Marrubium vulgare*.

Waco. Nine males, six at *Rubus*, three at yellow *Oxalis*, March 22 (R. A. Cushman).

Clarksville. March 30, 1908 (E. S. Tucker). Three males; "old stalks horseweed."

Victoria. One male, March 6 (J. C. Crawford); one female, on *Quercus*, March 26 (J. D. Mitchell).

Calvert. One male, April 5 (C. R. Jones).

Handley. One male, April 27 (J. C. Crawford).

Paris. Three males, April 10 (F. C. Bishopp; female, April 17 (Bishopp).

Falfurrias. Four males at *Helianthus*, May 18 (A. C. Morgan).

Devil's River. Seven females, one collected by Pratt, the others by Bishopp, May 3 to 6, at flowers of *Marilaunidium organifolium*, *Gaillardia pulchella*, and sumach.

Del Rio. One female, May 8 (Bishopp).

Weatherford. Three females, June 9, at *Monarda* (C. R. Jones).

Wolfe City. One female, at *Helenium tenuifolium*, May 31 (Bishopp).

Wichita Falls. Two females, at *Monarda*, June 11 (C. R. Jones).

Llano. One female, May 20 (W. D. Pierce).

Mineral W[ell?]. Two females, June 9, at *Monarda* (Jones).

Brownsville. Two females, at *Monarda citriodora*, March 23 (Jones and Pratt).

DASYPODA JAPONICA, new species.

Almost exactly like *D. plumipes* Panzer (*hirtipes* Latreille), but in the female the head is broader, with the eyes more diverging above, the black hair on dorsum of thorax is less abundant, the middle tibiae and tarsi have purplish-sooty hair on outer side, and the hind tibiae and tarsi are more or less ornamented in the same manner. The only male seen is headless, but it is like a rather small pale *plumipes*; the sixth ventral segment is broadly shallowly emarginate.

Habitat.—Japan (Mitsukuri), one female (type) in U. S. National Museum; Japan, 10 females, 1 male, in Berlin Museum. The Berlin Museum specimens appear to have been in some liquid, and the pubescence is matted.

The tibiae and tarsi of the male (except for the hair) are black, whereas in *D. tibialis* Morawitz from Mongolia they are rufo-testaceous.

Type.—Cat. No. 13540, U.S.N.M.

EUCERA SOCIABILIS Smith.

Female.—Length about 14 mm.; black, without light markings on face; hair of vertex and thorax above pale yellowish, not mixed with black; hair of face, sides of thorax, etc., paler, to yellowish white, but that of labrum distinctly ochreous; head broad, facial quadrangle a little broader than long; clypeus strongly and very densely punctured, but shining; antennae entirely dark, third joint almost as long as 4+5; mesothorax closely punctured at sides, but in middle with strong, widely separated punctures on a shining ground; scutellum with dense small punctures, entirely contrasting with middle of mesothorax; tegulae ferruginous; wings dusky; hair on inner side of hind basitarsus ferruginous; abdominal segments 3 to 5 with broad dark chocolate basal bands; 2 to 4 with broad white apical bands, that on 2 very broadly, that on 3 narrowly, interrupted; apex of fifth segment with pale brown hair.

Male.—The male varies greatly in size (length $11\frac{1}{2}$ –13 mm.) and in the color of the pubescence, which may be rich fox-red or pale gray on the vertex and thorax above. The abdomen is described by Smith as without bands, but in good specimens there are very distinct creamy-white to fulvous hair bands at the apices of segments 2 to 4, the abdomen looking like that of *E. cinerea* Lepeletier. The mandibles have no yellow spot.

Habitat.—Pekin, China, April 20, 21, May 11, 12, 14, 1901 (M. L. Robb).

I thought at first that this was a new species, but fortunately I have a pair of *E. sociabilis* cotypes from Hiogo, Japan, from F. Smith's collection, and upon close comparison they are evidently conspecific with the insect from Pekin. The cotype male is, indeed, without distinct abdominal bands, but they appear to have been worn off, as is the case with nearly all the hair on the mesothorax and scutellum. In consequence of the difference in condition, the Chinese and Japanese specimens seem on superficial examination to be quite different things. Smith himself stated that *E. sociabilis* occurred also in China and Siberia. The females seen by me are quite uniform, but the males vary much. It is just possible that these males represent more than one species, but I can not find any tangible structural differences, and similar variation is well known in other Eucerine bees.

In spite of the difference in venation, *Tetralonia* is much nearer to *Eucera* than to *Melissodes*. *Eucera*, with two submarginal cells, is abundantly developed in Europe, but becomes scarce in eastern Asia, and fails to occur in America.

TETRALONIA MITSUKURII, new species.

Male.—Body and antennæ each about 9 mm. long; black, the tarsi beyond the base ferruginous; clypeus, labrum, and large spot on base of mandibles yellow; apical part of mandibles with an orange patch; maxillary palpi pale, the third joint long, the three last minute; antennæ long, the flagellum slender, crenulated, ferruginous beneath, varying to black with the faintest red tinge; third antennal joint very short; hair of head and thorax pale to rather bright ochreous above, white below, no dark hair intermixed; mesothorax and scutellum strongly punctured, but smooth and shining on disk, the mesothoracic punctures here widely separated; tegulæ clear rufotestaceous; legs with pale hair; middle and hind tarsi slender; wings faintly dusky, nervures ferruginous; abdomen well punctured, especially the first two segments; hind margins of segments very narrowly dark rufous, the punctures coming almost to the margin; no apical hair-bands, but broad pale grayish-ochreous basal ones; sixth segment with the hair usually redder.

Female.—Length about $10\frac{1}{2}$ – $11\frac{1}{2}$ mm.; black, robust, the small joints of tarsi ferruginous, and the hind margins of the abdominal segments variably reddish; face all black; mandibles with a large apical orange patch; clypeus strongly and densely punctured; flagellum dark, at most faintly reddish beneath; hair of scutellum a lively yellowish-fulvous; hair on inner side of hind basitarsi ferruginous; abdomen well punctured as in the male; basal band on second segment very narrow in middle, those on third and fourth broad and pale, especially that on fourth, which is almost silvery white and covers the margin of the segment; hair on fifth segment and apex dark reddish chocolate, but that at sides of fifth broadly pale.

Habitat.—Type male and three others (1 male, 2 females) from Japan (Mitsukuri). Also two of each sex from Tokyo, Japan, September, 1892; one male is dated September 26.

Related to *T. nipponensis*, but uniformly smaller, with the abdomen more strongly punctured, and the third antennal joint of the female rather shorter in proportion.

Type.—Cat. No. 13541, U.S.N.M.

TETRALONIA NIPPONENSIS (Pérez).

Described by Pérez as a *Macrocera*. I believe my identification is correct, although the mandibles of the female have a subapical orange mark, whereas Pérez describes them as entirely black. In the female the dark red hair at bases of segments 2 to 4, and the fine orange-fulvous covering the fifth, are especially characteristic. The material consists of three males and two females, labeled Japan (Mitsukuri).

TETRALONIA CHINENSIS Smith.

Twenty-two males and eight females from Pekin, China, April 20 to 30, 1901 (M. L. Robb). Smith described only the male; the female is much like that of *T. nipponensis*, but easily separated by the black hair at the bases of the abdominal segments. The fifth segment has the hair white at sides and dilute chocolate in the middle. The clypeus is densely and coarsely punctured. There are three white or greyish-white abdominal hair bands.

Knuth¹ records *T. chinensis* from Japan, and gives *floralia* Smith and *sociabilis* Smith as synonyms. *T. floralia* is quite distinct from *chinensis*, while *sociabilis* belongs to the genus *Eucera*.

The following key separates the above three species:

Males.....	1.
Females; hair on inner side of hind basitarsus bright ferruginous.....	3.

¹ The record appears in the last volume of Knuth's *Blütenbiologie*, edited by Dr. E. Loew. While Knuth collected the material on which the record was made, he was, I suppose, in no way responsible for the erroneous synonymy.

1. Small, length of body and antennæ each about 9 mm.; mandibles with a large yellow spot.....*mitsukurii* Cockerell.
Larger, mandibles without a yellow subbasal spot.....2.
2. Hair of abdomen above all pale.....*nipponensis* Pérez.
Hair of abdomen black or fuscous on bases of segments beyond the second.....*chinensis* Smith.
3. Bases of abdominal segments with black feltlike hair.....*chinensis* Smith.
Bases of abdominal segments with brownish or reddish hair.....4.
4. Length 14-15 mm.....*nipponensis* Pérez.
Length 10½-11½ mm.....*mitsukurii* Cockerell.

Since the above was written, Friese has published two new species from Japan, *T. okinawæ* and *T. japonica*. There is some resemblance between *T. okinawæ* and *T. mitsukurii*, but the latter is smaller and evidently distinct. *T. okinawæ* does not come from Japan proper, but from the Riu Kiu Islands. *T. japonica* is recorded from "Jaku-shima, Süd-japan," but this is evidently Yaku Shima, in the Riu Kiu group.

Genus ANTHOPHORA.

I have included in my account of the Asiatic species in the National Museum a small series of Asiatic forms from the Berlin Museum.

ANTHOPHORA SAVIGNYI Lepeletier.

Three females in the Berlin Museum, collected by Ehrenberg in Syria and the Arabian Desert. In Friese's tables they run to *A. albigena* Lepeletier, but they have the stature and general appearance of *A. circulata* Fabricius from Willowmore, S. Africa (*Brauns*). I am satisfied that they are separable from *albigena*, *circulata*, *quadri-fasciata*, etc., but they agree excellently with the description of *A. savignyi* Lepeletier, based on a specimen from Egypt of unknown history. The only difference I can find is that the hair of the legs is in the main pale, not black; should this prove constant in a series, it may indicate a separable subspecies. The fulvous hair of the head and thorax above is strongly mixed with fuscous, a point overlooked by Lepeletier. The insect is distinguished from *A. quadrifasciata* by the evident pale lateral face-marks (formed as in *albigena*) and the large patch of white hair on the outer side of the hind basitarsus. One of the Arabian specimens is paler than the others, the hair of the thorax being colored as in *A. confusa*. Dours thought *A. savignyi* was a variety of *A. rufipes* Lepeletier, a small (8 mm. long) South African species. I can not believe that this is at all the case; certainly, our insect is not a variety of *rufipes*.

ANTHOPHORA ZONATA WHITEHEADI Cockerell.

One male from the Island of Luzon, Philippine Islands, in the Berlin Museum. It was obtained from Rolle. The male, now first made known, differs from the female in the same manner as the rest

of the *zonata* group. It is about or slightly over 10 mm. long, the abdominal bands shining lilac-blue or purple, the hair on outer side of hind tibiæ wholly creamy white. The face markings are pale yellow, and the third antennal joint has a conspicuous ferruginous spot.

ANTHOPHORA ZONATA BURUENSIS, new subspecies.

Female.—Length about 13 mm.; like *zonata*, but abdominal bands entirely purple, as in *A. zonata whiteheadi*; face-markings whitish; scape with a pale stripe; fourth and fifth antennal joints ferruginous beneath; hair of thorax above pale fulvous; tegulæ ferruginous; hair on outer side of hind tibiæ and basal two-thirds of basitarsi clear orange-ferruginous (in the manner *A. zonata ternatensis*), the tibia with a whitish apical brush.

Habitat.—Buru (Moluccas), one female (V. Martens). Berlin Museum.

ANTHOPHORA CONFUSA Smith.

Two from the Berlin Museum, one labeled "Himalaya, Hoffm.," the other without locality. The colors of this insect are like those of the African *A. niveata* Friese, but the white abdominal bands are narrower than in *niveata*.

ANTHOPHORA EVERSA, new species.

Female.—Length 14 mm., anterior wing $9\frac{1}{2}$; black, with pale creamy or dull white hair, that on the head and thorax above mixed with black; tegument of face wholly black; labrum subquadrate, black, very coarsely rugose, with a smooth brownish spot near each upper corner; mandibles black; malar space exceedingly small, but not entirely obsolete; eyes pale red; head broad; face with greyish hair; clypeus shining, prominent, convex, with distinct rather sparse punctures and a median smooth line; disk of mesothorax shining, with scattered small punctures; tegulæ ferruginous, fuscous at base; wings dusky, b. n. meeting t. m. a little on the basal side; legs black, with white hair, that on inner side of tibiæ, and especially tarsi, ferruginous; small joints of tarsi clear red; spurs clear orange ferruginous; abdomen cordiform, black, the first segment covered with creamy-white hair, the following three with black hair, and broad apical white hair bands, but the disk of the fourth segment with largely pale hair in the middle; fifth segment with pale hair, but the median apical brush dark fuscous; apical plate very narrow; last ventral segment projecting; ventral hair white, with a slight creamy tinge; antennæ black, third joint longer than the three following united.

Habitat.—Lantschôu, China (W. Filchner). Berlin Museum.

Differs from *A. finitima* Morawitz by the clear red spurs, the apical brush on the hind basitarsus pale reddish instead of black, and the

larger size, but seems to be closely allied. Differs from *A. testaceipes* Morawitz by the smaller malar space, the redder tegulæ, the darker basitarsi, and the white (not ferruginous) hair of middle of abdomen beneath. Differs from *A. tedshenensis* Radoszkowski by the larger size, dusky wings, and the absence of hair on the disk of the clypeus. *A. connexa* (*Podalirius connexus* Nurse) is also related, but has piceous spurs, and other differences. There is quite a strong general resemblance to *A. blanda* Pérez, from Tunis, but the abdominal bands are greyish, slightly yellowish, not pure white as in *blanda*.

ANTHOPHORA HILGENDORFI, new species.

Female.—Length about 21 mm., expanse about 35, width of abdomen a little over 8; robust, black, without light face markings; malar space evident; labrum broader than long, very rugose, with the lower edge greatly thickened, and with a pair of small reddish spots near base; clypeus densely punctured, with a very obtuse median keel; scape red at apex, antennæ otherwise black with the third joint about as long as the next five together; hair of occiput, thorax above, upper part of pleura broadly, metathorax, and first two dorsal abdominal segments, all pale fulvous, not mixed with black; hair otherwise black except on outer side of hind tibiæ in front, where it is ferruginous; wings moderately dusky; tegulæ clear ferruginous; spurs dark ferruginous. Very close to *A. hispanica* Lepeletier, but less robust, the third and following abdominal segments with black hair, and without the lateral light hair so conspicuous in *hispanica*; the clypeus also is not so densely roughened. If the insect had been taken in Spain or Northwest Africa I should think it a variety of *hispanica*, but considering the remote locality, and the fact that it does not accord with any of the members of the *hispanica* group described from Central Asia, it is doubtless a distinct species.

Habitat.—Japan (Hilgendorf). Berlin Museum.

ANTHOPHORA FULVITARSIS Brullé.

One male, agreeing well with this species, though less robust than one from Algeria. Pekin, China, April 20, 1901 (M. L. Robb). Nurse found *A. fulvitaris* at Quetta, and Friese states that a male from China is in the Schulthess collection.

ANTHOPHORA VENERABILIS, new species.

Female.—Length 18 to 19½ mm.; black, including the face, densely covered with pale grey hair, but that on hind knees, outer side of hind tibiæ, and hind basitarsus except at apex, bright orange ferruginous. Malar space well developed; antennæ black, third joint about as long as the next four together; labrum with pale ferruginous hair; clypeus closely punctured; sides of vertex and anterior part of cheeks with some black hair; mesothorax with black hair mixed with the light;

tegulæ dark rufous; wings moderately dusky; b. n. just falling short of t. m.; anterior femora with very long greyish-white hair behind, but black below and in front; their tibiæ with black and pale mixed; their tarsi with black, rather reddish on inner side; middle femora with long sooty hair; their tibiæ and tarsi with ferruginous hair on outer side and black on inner; hind femora with black hair, but mostly white on upper side (white also on hind coxæ and trochanters beneath); their tibiæ and tarsi with black hair on inner side and red on outer, the basitarsal brush black or dark reddish; hind spurs ferruginous, with lateral dark lines; apex of abdomen, around the narrow apical plate, black haired; some black hair on basal part of third segment, almost hidden; apical ventral segments reddish haired in middle, with black hair before the red.

Habitat.—Japan (Hilgendorf). Five females in Berlin Museum.

Runs in Friese's table to *A. senilis* Eversmann, from Russia and Turkestan, but is larger, with the hair of the legs differently colored in part and the tarsi dark. If it came from the mainland I should think it probably a subspecies of *A. senilis*. Doctor Friese has marked one of the specimens "*canescens*?", i. e. *A. nigrocincta*, var. *canescens* Brullé, from Greece. It does accord very nearly with Brullé's short description, but considering the different locality, and the fact that Brullé's insect was very insufficiently described, I can not assume that the Japanese species is identical. It is perhaps just possible that Brullé had a Japanese specimen with the wrong locality; Friese places *canescens* as a variety of *nigrocincta* without seeing specimens, and if the two are really conspecific, the name *canescens* has priority and should stand for the species. In Dalla Torre's Catalogue *canescens* appears as a *Megachile*.

ANTHOPHORA ROBBI, new species.

Female.—Almost exactly like *A. atroalba* Lepeletier, but all the hair on outer side of hind basitarsus black, that on outer side of hind tibia silver white. It very likely deserves only subspecific rank, but the male may show more difference.

Habitat.—Pekin, China, May 7, 1901 (M. L. Robb). U. S. National Museum.

Type.—Cat. No. 13542, U.S.N.M.

ANTHOPHORA RETUSIFORMIS, new species.

Male.—Length about 15 mm., black, the occiput, thorax above, pleura, metathorax, and first two abdominal segments with bright orange-fulvous hair, not mixed with black; a little black hair on vertex; hair of face pale yellowish, of lower part of cheeks long and white; abdomen shining, feebly and sparsely punctured, the third and following segments with black hair, apical margins of second to

fourth with whitish hair much as in *A. atro-alba* female, but less distinct; extreme sides of fifth and sixth segments with white hair; sides of apical half of venter with much light hair; legs dark, including tarsi; outer side of tibæ with ferruginous hair; anterior tarsi with light hair, but middle and hind basitarsi with much black hair, especially behind, though they have light hair at apex, and the small joints have light hair, except a black tuft on each side of last joint of middle tarsi; the ornamentation of the middle tarsi is as in *A. retusa* (not as in *A. monacha*), except that the posterior black brush of the basitarsus is longer and more or less evidently pointed apically, and the apical black brush seems smaller; face-marks yellow, including clypeus (*with no basal spots*), lateral marks (filling space between clypeus and eye, and with an upward process ending a little away from orbit), narrow supraclypeal band, labrum (except the two basal spots) and the rather flattened scape in front; mandibles wholly black; eyes green; flagellum wholly dark; third antennal joint about as long as the next three united; tegulæ piceous; wings moderately dusky; third s. m. broader above than second; mesothorax with dense small punctures.

Habitat.—Pekin, China, April 20, 1901 (M. L. Robb). U. S. National Museum.

A. retusa Linnæus is wide spread and very variable, and I was at first inclined to consider the present insect a variety or subspecies.

Type.—Cat. No. 13543, U.S.N.M.

ANTHOPHORA MELANOGNATHA, new species.

Male.—Runs in Friese's table to *A. senescens* Lepeletier, except that it is about 16 mm. long, and has quite the aspect of *A. fulvitaris* Brullé. It differs from *A. fulvitaris* as follows: Mandibles wholly black; a black band down each side of clypeus; lateral face-marks widely separated from supraclypeal band; yellow area on scape smaller; apical abdominal segments with hair-bands like those on second and third (thus rather combining the features of *fulvitaris* and *senescens*); apical spines ferruginous. The legs are practically as in *fulvitaris*. From *A. senescens* (specimen from Cairo compared) it is easily known by the pale bands on the second and third abdominal segments, the whole ornamentation of the basal half of the abdomen being exactly as in *fulvitaris*. The face markings are practically as in *senescens*, but the third antennal joint is shorter.

Habitat.—Pekin, China, May 14, 1901 (M. L. Robb). U. S. National Museum.

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I give a table for the separation of the above species:

Hind margins of abdominal segments with violet bands.....	1.
Hind margins not so colored.....	2.

1. Hair on outer side of hind tibiæ creamy white *A. zonata whiteheadi* Cockerell.
 Hair on outer side of hind tibiæ red. *A. zonata buruensis* Cockerell.
2. Very large robust species, 18-21 mm. long, abdomen very hairy, not banded or spotted..... 3.
 Not so large, abdomen not thus hairy, usually banded..... 4.
3. First two abdominal segments with pale fulvous hair, those beyond with dark.
 A. hilgendorfi Cockerell.
 Abdomen covered with pale grey hair; tibial scopa bright fulvous.
 A. venerabilis Cockerell.
4. Abdomen with lateral white spots of hair, or interrupted bands.
 A. robbi Cockerell.
 Abdomen not so marked..... 5.
5. Hair of thorax above orange-fulvous, not mixed with black or fuscous.
 A. retusifformis Cockerell.
 Hair of thorax above mixed with black or fuscous..... 6.
6. Hair of hind tibiæ red above and black below; of thorax above red; tegulæ red
 (Khow Sai Dow Mountain, 1,000 feet, Lower Siam, Feb. 1899, W. L. Abbott).
 A. sp. (probably new, but condition too poor to describe).
7. Hair of hind tibiæ above not red..... 7.
7. Second abdominal segment with much erect pale hair..... 8.
 Second abdominal segment without such hair..... 9.
8. Mandibles (male) with a large yellow spot..... *A. fulvitaris* Brullé.
 Mandibles (male) without a yellow spot..... *A. melanognatha* Cockerell.
9. Tuft of hair behind wings clear strong fulvous; flagellum red beneath.
 A. savignyi Lepeletier.
 Tuft of hair behind wings pallid, not distinctly if at all fulvous..... 10.
10. First abdominal segment covered with pale hair; face without light markings.
 A. eversa Cockerell.
 First abdominal segment not so covered; clypeus with light markings..... 11.
11. Larger; flagellum dark..... *A. confusa* Smith.
 Smaller; flagellum red beneath..... *A. savignyi* Lepeletier, variety.